



**OPERATING
SUMMARY**

POINT EDWARD

water pollution control plant

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1969
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IRID WATER
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ONTARIO WATER RESOURCES COMMISSION

Division of Plant Operations

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1969**

Point Edward : water pollution
control plant.
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Water management in Ontario

Ontario
Water Resources
Commission

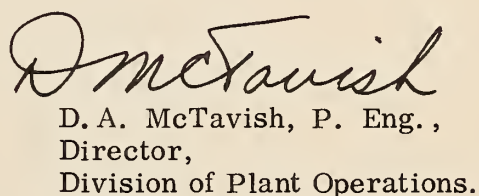
135 St. Clair Ave. W.
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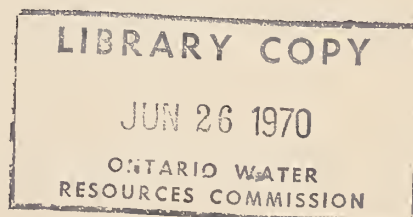
The operating efficiency and financial status of the water pollution control facilities operated for you in 1969 are presented in the following pages.

The regional operations engineer's comments and the statistical data will assist you in gauging the plant's level of performance. A new flow chart and up-to-date design data are also provided.

Various divisions and sections within the Commission have co-operated in providing what we trust is an accurate and concise annual operating summary.



D.S. Caverly,
General Manager.


D.A. McTavish, P. Eng.,
Director,
Division of Plant Operations.



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POINT EDWARD
water pollution control plant

operated for

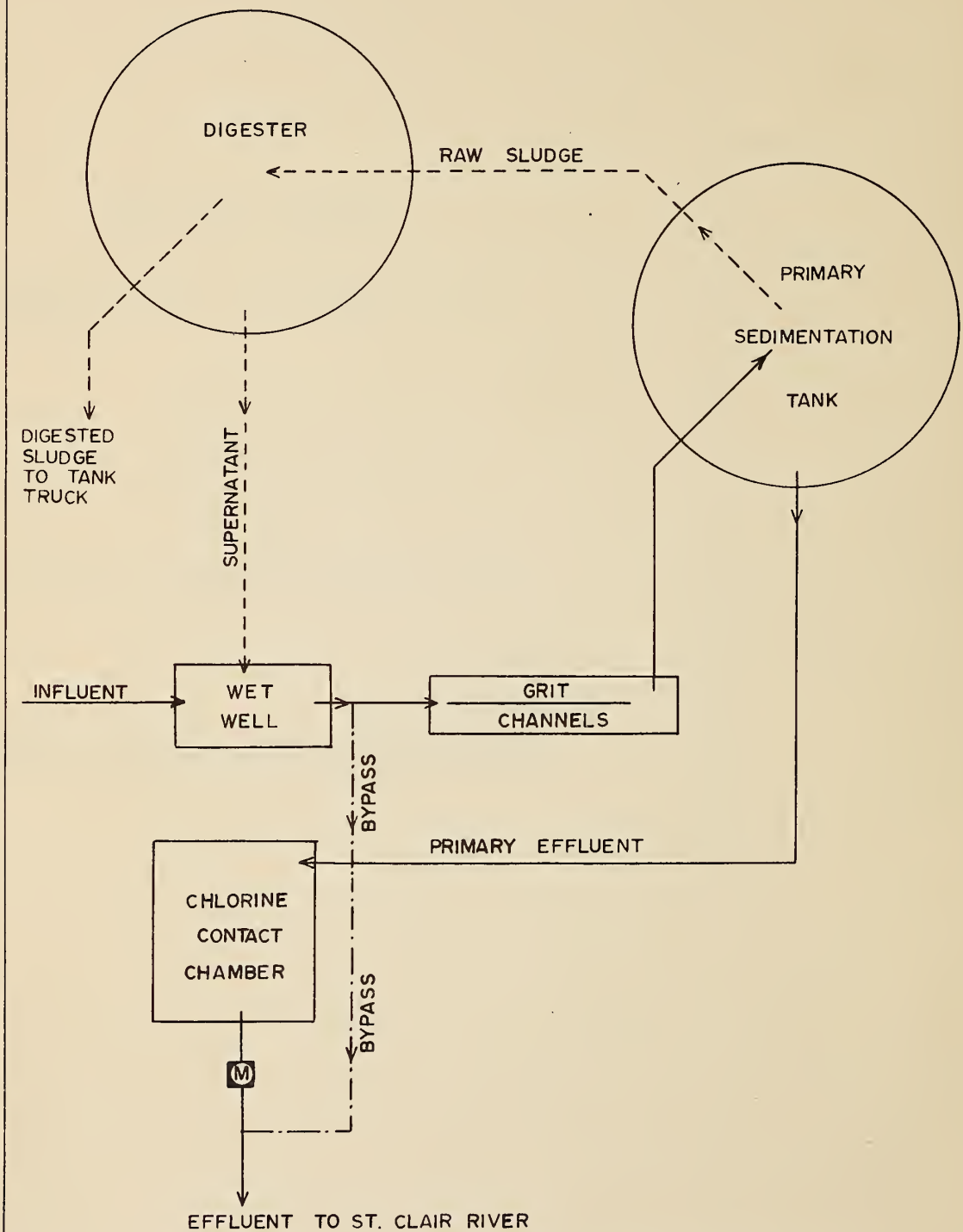
THE VILLAGE OF POINT EDWARD

by the

ONTARIO WATER RESOURCES COMMISSION

1969 ANNUAL OPERATING SUMMARY

POINT EDWARD WATER POLLUTION CONTROL PLANT



DESIGN DATA

PROJECT NO.	2-0036-59	TREATMENT	Primary
DESIGN FLOW	0.57 mgd	DESIGN POPULATION	5,700
BOD - Raw Sewage	170 mg/l	SS - Raw Sewage	200 mg/l
- Removal	47%	- Removal	60%

RAW SEWAGE PUMPS

Type: Fairbanks-Morse
Size: Two 1300 Igpm @ 35' tdh

PRIMARY TREATMENT

Screening

Type: Bar screens, manually cleaned
Size: Two; 1 $\frac{1}{4}$ " spacing

Grit Removal

Type: Channels
Size: Two 16 X 1.75 X 2'
Retention: 0.88 min

Primary Sedimentation

Type: Dorr
Size: One 35' dia x 10' swd
(60,000 Imp. gal)
Retention: 2.53 hr
Loading: Surface, 594 Imp. gal/ft²/day
Weir, 5,190 Imp. gal/ft/day

CHLORINATION

Type: BIF
Size: One 200 lb/day
Chlorine Contact Chamber

Size: One 20 X 10 X 8 $\frac{1}{2}$ ' (10,600 gal)
Retention: 27 min

OUTFALL

- to St. Clair River

SLUDGE HANDLING

Digestion System - Single-stage

Type: Dorr: 2 draft tube mixers
Size: One 35' dia x 20' swd (19,200
cu ft or 119,808 gal)
Loading: 1.07 lb/cu ft/mo

PUMPING STATIONS

Helena Street

Type: Smith & Loveless
package lift station
Size: Two 750 gpm @ 40' tdh

Michigan Avenue

Type: Smith & Loveless
package lift station
Size: Two 500 gpm @ 20' tdh

402 Station (2-0183-65)

Type: Smith & Loveless
Package Lift Station
Size: Two 175 gpm @ 23' tdh



GENERAL

This project consists of a 0.57 mgd primary treatment plant complete with raw sewage pumping, grit removal, primary sedimentation, chlorination, single-stage digestion and liquid sludge haulage. The project also includes a complete sewer system containing three package pumping stations.

During 1969, the plant process was occasionally disrupted by industrial waste dumping. Although these dumps had no major, lasting effect, their frequency is increasing. These oil spills caused slight problems in the digestion system.

EXPENDITURE

The operating costs for 1969 increased six percent from the previous year, rising to \$222 per million gallons treated. This was due largely to higher maintenance costs, salary increases and increased chemical costs. Lower efficiency removal raised the cost per pound of BOD removed from 29 cents per pound to 35 cents.

PLANT FLOWS and CHLORINATION

A total of 77.77 million gallons of sewage was treated for a hydraulic load factor of 0.37. Daily flows averaged 210,000 gallons, with a high of 400,000 gallons in September and low of 150,000 gallons in August. The September figure was equivalent to a load factor of 0.89.

Monthly flows averaging 6.48 mil. gal. reached their peak in August. Average flows have been almost constant since 1966.

Disinfection of the final effluent is practised 12 months of the year. During 1969, 10,897 pounds of chlorine were required at an average dosage

of 14.4 milligrams per litre. This is slightly higher than the 1968 dosage.

PLANT LOADING and EFFICIENCY

The raw sewage BOD average of 214 mg/l was 15% higher than the 1968 value of 186 mg/l; and the suspended solids concentration averaged 25% higher at 277 mg/l compared to 222 mg/l. These results are based on twice monthly samples.

The plant provided an average reduction of 30% for BOD and 69% for suspended solids. The suspended solids removal is slightly higher than the design value of 60% due to the low hydraulic load factor. Removal of BOD is lower than the design value of 47%; however, it is approximately the same as the 1968 value.

Grit removal averaged 1.5 cubic feet per million gallons and is within the range normally encountered.

SLUDGE DIGESTION and DISPOSAL

In 1969, there was a 15.5% decrease in the volume of raw sludge pumped to the digester and an increase in the concentration of solids. The 64,700 gallons of digested sludge removed was 19.6% of the volume of raw sludge.

There was a total reduction of volatile matter during the year of 60%. Methane gas produced from the digestion process was burned as a waste product. Digested sludge was hauled away and disposed of at a cost of \$2.00 per cubic yard.

CONCLUSIONS and RECOMMENDATIONS

The plant operated at 37% of hydraulic capacity and has considerable reserve for primary treatment. It should not require hydraulic expansion for a good many years.

Since the plant is only a primary plant it has never met the OWRC effluent objective of 15 mg/l BOD and suspended solids. During 1969, the BOD reduction was only 30% and therefore some thought should be given to expanding the plant to secondary treatment.

PROJECT COSTS

2-0036-59

NET CAPITAL COST (Final) Long Term Debt to OWRC	\$779,773.82
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1969	\$167,092.79
Net Operating	\$ 17,289.69
Debt Retirement	15,736.00
Reserve	3,487.99
Interest Charged	<u>43,655.52</u>
TOTAL	\$ <u>80,169.20</u>

RESERVE ACCOUNT

Balance @ January 1, 1969	\$ 42,339.92
Deposited by Municipality	3,487.99
Interest Earned	<u>2,469.50</u>
	\$ 48,297.41
Less Expenditures	<u>975.00</u>
Balance (@ December 31, 1969	\$ <u>47,322.41</u>

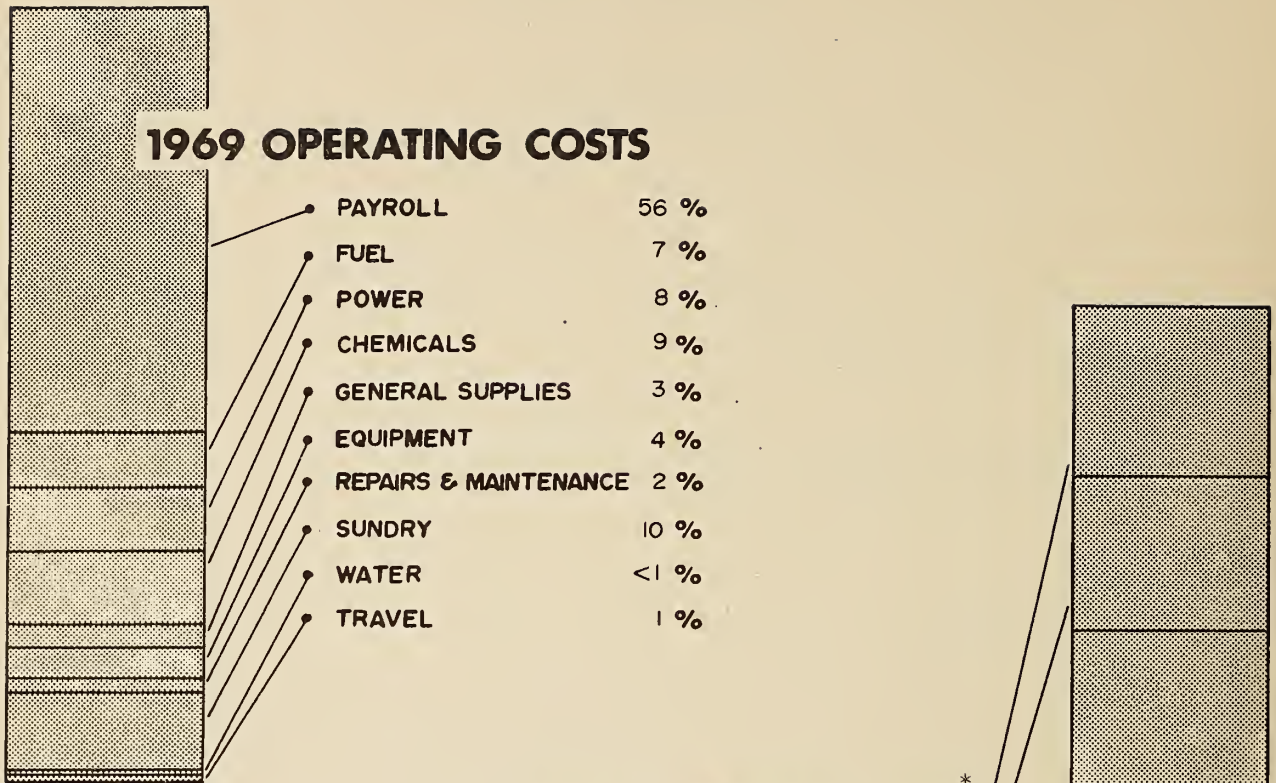
2-0183-65

NET CAPITAL COST (Est.) Long Term Debt to OWRC	\$ <u><u>47,428.72</u></u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1969	\$ <u><u>4,118.67</u></u>
Net Operating	\$ Nil
Debt Retirement	1,259.00
Reserve	232.84
Interest Charged	<u><u>2,634.85</u></u>
TOTAL	\$ <u><u>4,126.69</u></u>

RESERVE ACCOUNT

Balance @ January 1, 1969	\$ 529.16
Deposited by Municipality	232.84
Interest Farned	<u><u>35.37</u></u>
	\$ 797.37
Less Expenditures	<u><u>-</u></u>
Balance @ December 31, 1969	\$ <u><u>797.37</u></u>

1969 OPERATING COSTS



TOTAL ANNUAL COST*

NET OPERATING	22 %
DEBT RETIREMENT	20 %
INTEREST	4 %
RESERVE FUND	54 %

Yearly Operating Costs

YEAR	MILLION GALLONS TREATED	TOTAL OPERATING COSTS	COST PER MILLION GAL	COST PER LB OF BOD REMOVED
1965	71.18	\$13,272.64	\$184.83	0.23
1966	75.92	12,800.22	168.61	0.21
1967	76.61	13,419.58	175.17	0.20
1968	75.95	16,298.62	214.60	0.29
1969	77.77	17,289.69	222.32	0.35

* 2-0036-59 only

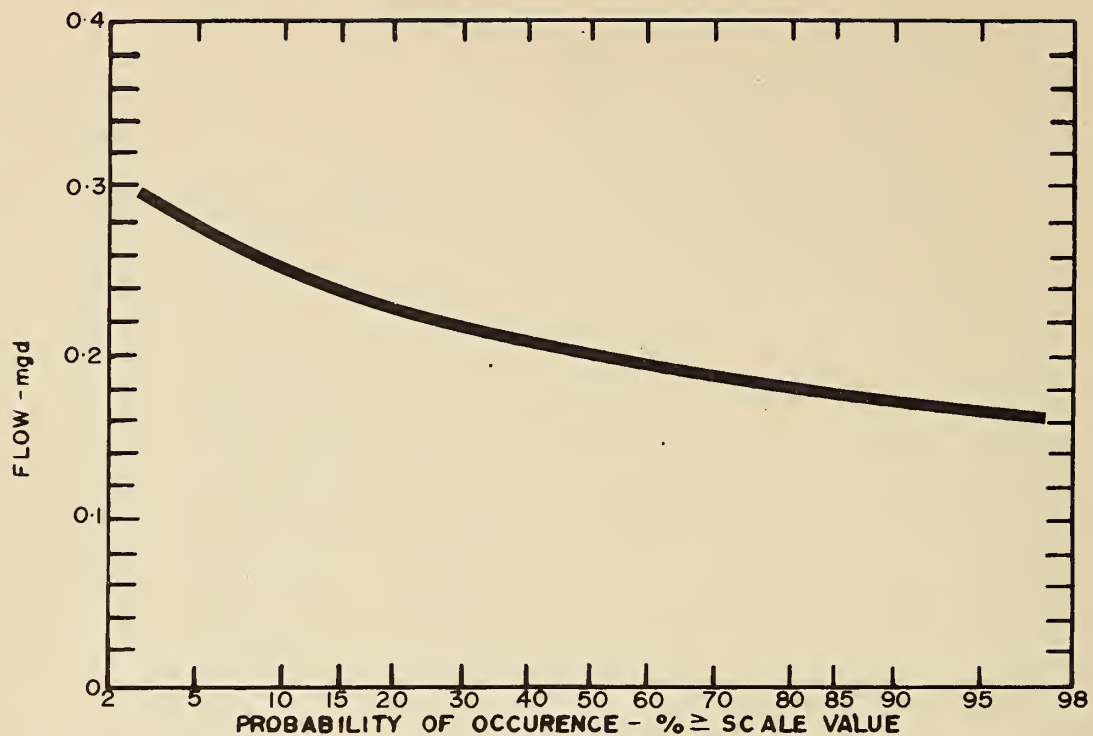
Monthly Operating Costs

MONTH	TOTAL EXPENDITURE	PAYROLL	CASUAL PAYROLL	FUEL	POWER	CHEMICALS	GENERAL SUPPLIES	EQUIPMENT	REPAIRS and MAINTENANCE	SUNDRY *	WATER	TRAVEL
JAN	1335.03	892.19	44.09	124.25	123.13	-	-	-	69.20	71.91	10.26	-
FEB	1273.15	604.47	51.52	165.67	127.08	238.61	62.31	-	20.09	3.40	-	-
MAR	1064.11	604.47	106.41	99.93	123.85	-	26.81	-	-	92.38	10.26	-
APR	1436.04	768.88	44.49	121.97	127.10	238.61	7.25	-	20.55	107.19	-	-
MAY	1233.29	727.36	48.49	119.58	136.18	-	28.74	-	-	162.68	10.26	-
JUNE	1304.87	636.84	95.82	79.15	138.51	220.50	53.02	-	-	81.03	-	-
JULY	1607.91	630.02	361.82	68.02	127.88	220.50	106.85	-	-	82.56	10.26	-
AUG	1695.13	930.19	406.68	48.62	110.24	-	44.78	-	69.60	85.02	-	-
SEPT	818.16	610.88	137.08	55.32	104.00	220.50	55.33	(530.00)	-	154.79	10.26	-
OCT	2638.31	631.37	54.60	56.99	111.92	220.50	38.30	1218.00	31.03	136.60	-	139.00
NOV	1070.90	624.42	46.45	71.04	105.15	-	-	-	-	213.58	10.26	-
DEC	1812.79	630.56	32.20	125.64	109.43	220.50	46.18	-	49.40	598.88	-	-
TOTAL	17289.69	8291.65	1429.65	1136.18	1444.47	1579.72	469.57	688.00	259.87	1790.02	61.56	139.00

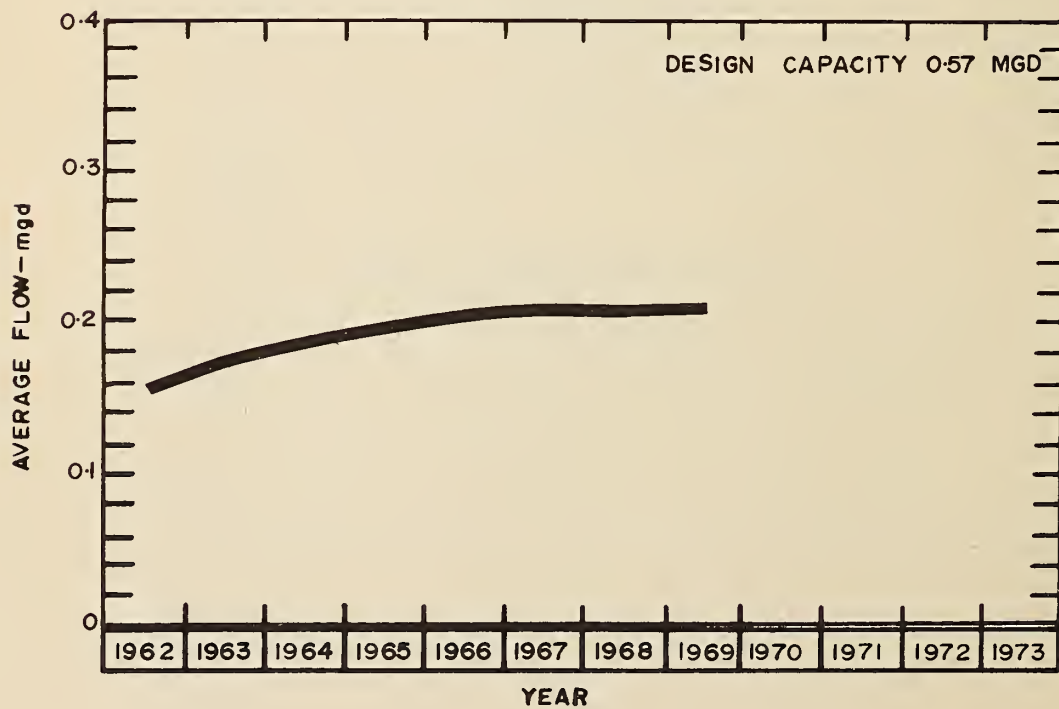
BRACKETS INDICATE CREDIT

* SUNDRY INCLUDES SLUDGE HAULAGE COSTS WHICH WERE \$644.00

PROCESS DATA

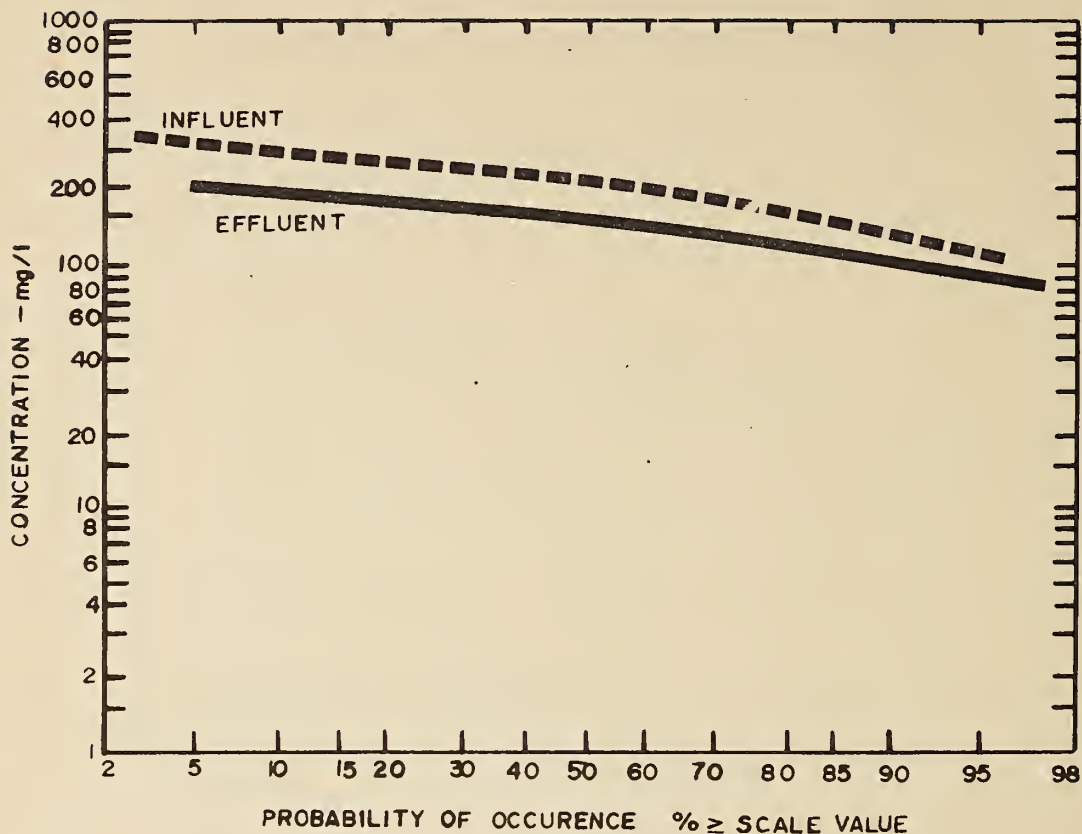


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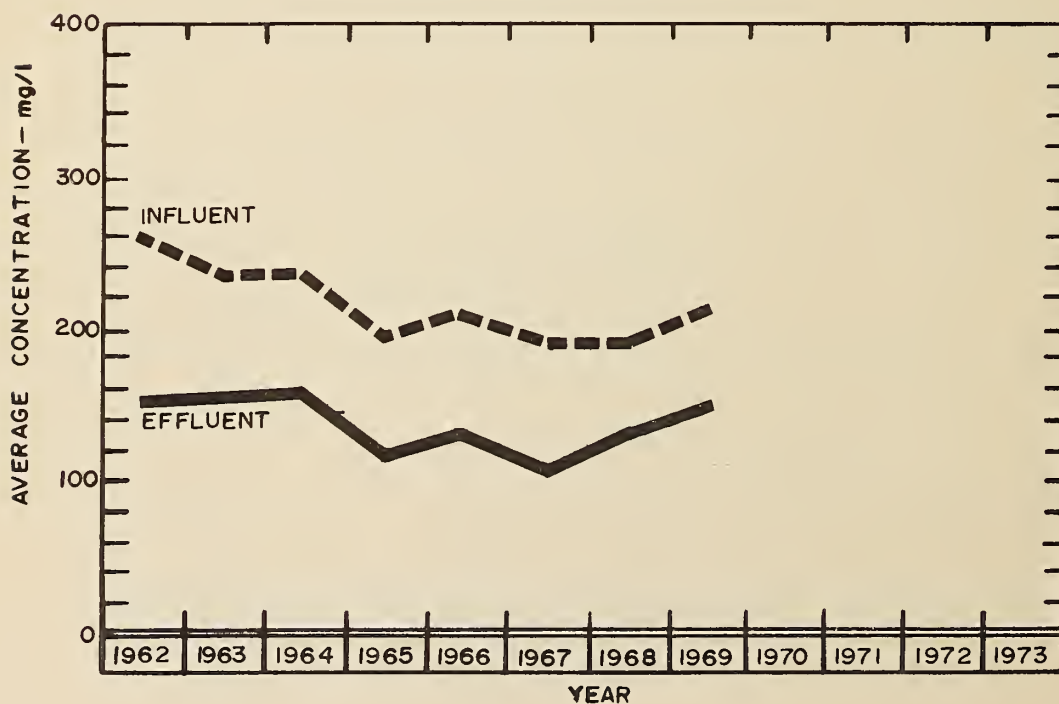


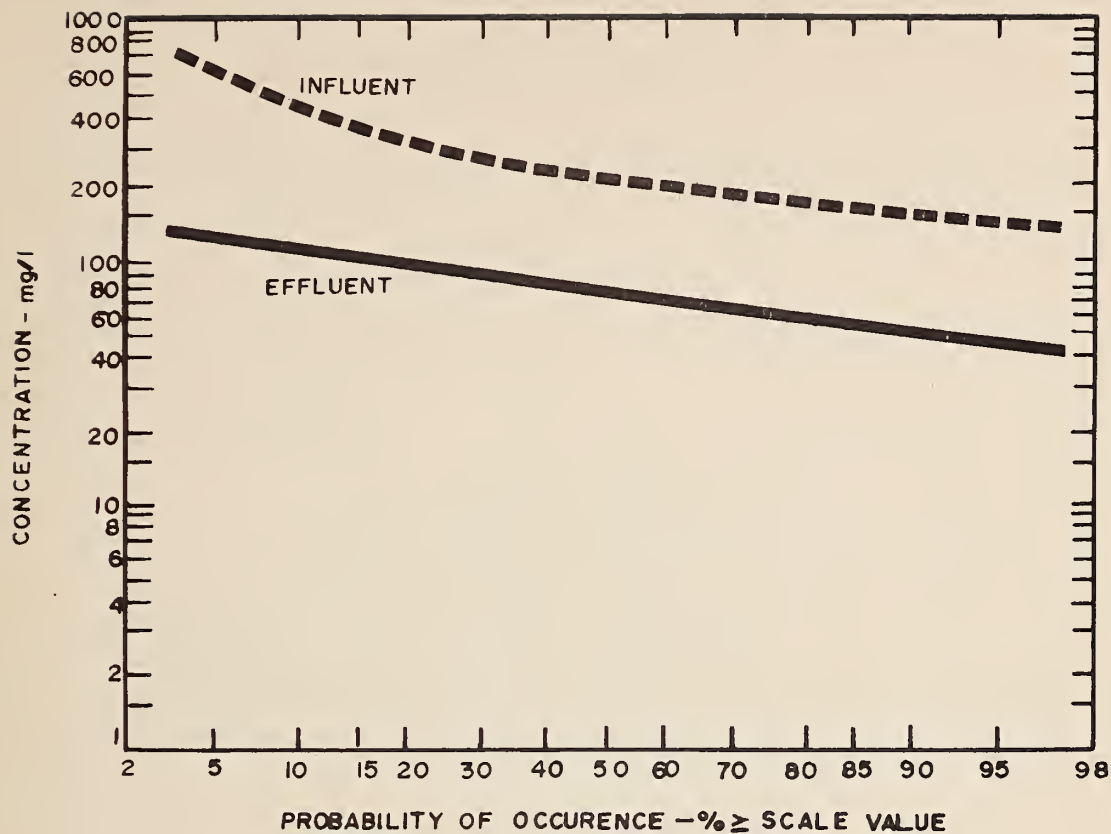
PLANT FLOWS and CHLORINATION

MONTH	TOTAL FLOW mil gal	AVERAGE DAILY FLOW mil gal	MAXIMUM DAILY FLOW mil gal	MINIMUM DAILY FLOW mil gal	CHLORINE USED pounds	DOSAGE mg/l
JAN	7.02	.23	.37	.18	953	13.6
FEB	5.68	.20	.23	.19	869	15.3
MAR	7.05	.23	.28	.17	618	12.2
APR	6.72	.22	.30	.16	902	13.4
MAY	6.73	.22	.30	.17	970	14.4
JUNE	6.13	.20	.26	.16	888	14.5
JULY	5.85	.19	.23	.16	1005	17.1
AUG	7.42	.24	.38	.15	957	12.9
SEPT	6.94	.23	.40	.16	989	14.3
OCT	6.28	.20	.29	.18	971	15.5
NOV	5.94	.19	.22	.16	959	16.1
DEC	6.01	.19	.24	.16	816	13.6
TOTAL	77.77	-	-	-	10897	-
AVERAGE	6.48	.21	-	-	908	14.4

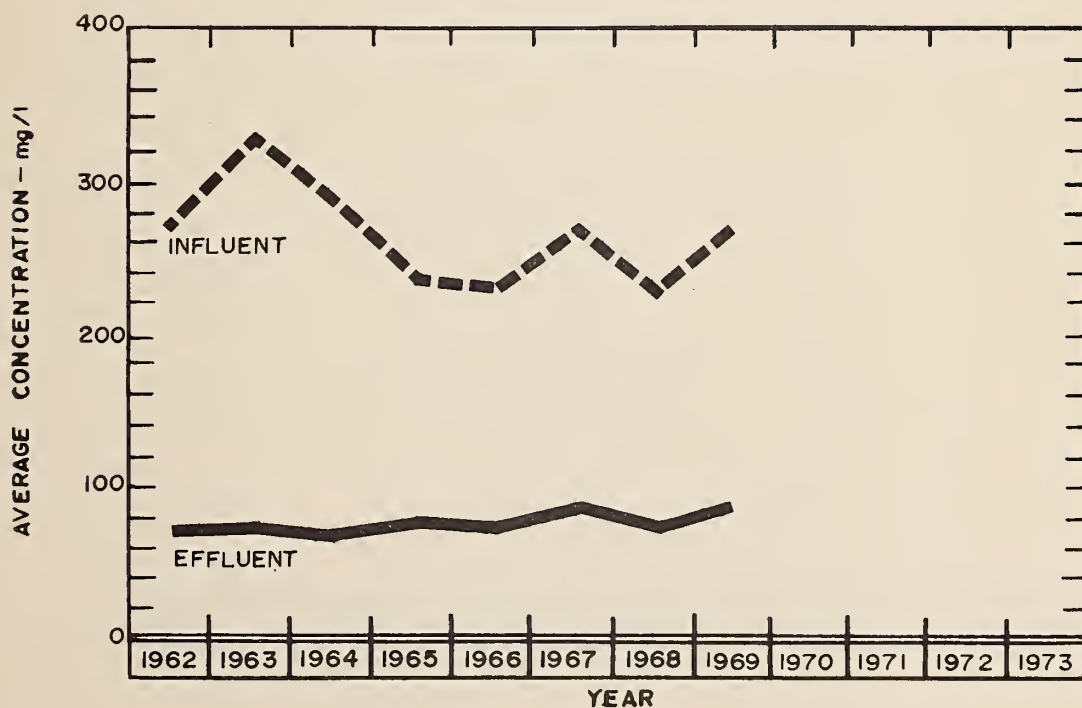


BIOCHEMICAL OXYGEN DEMAND



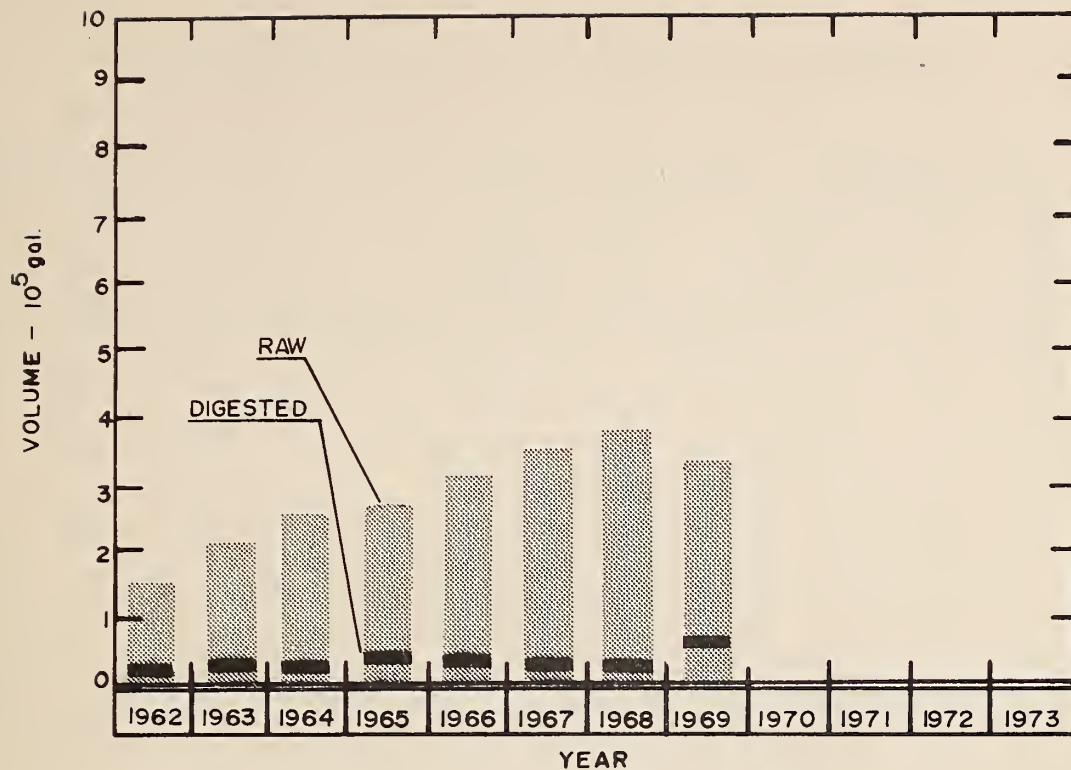


SUSPENDED SOLIDS

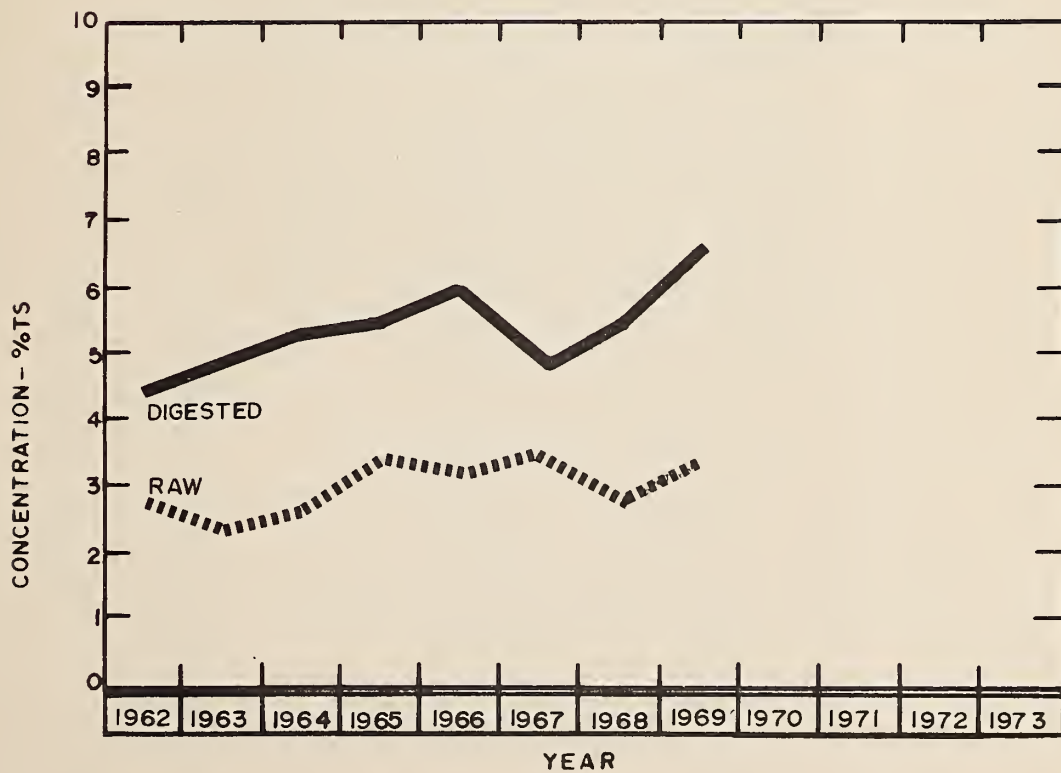


PLANT EFFICIENCY

MONTH	BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				GRIT REMOVAL
	INF. mg/l	EFF. mg/l	REDUCTION		INF. CONCN mg/l	EFF. CONCN mg/l	REDUCTION		
			%	10 ³ pounds			%	10 ³ pounds	cu
JAN	210	160	24	3.5	248	124	50	8.7	8
FEB	310	165	47	8.2	566	126	78	25.0	6
MAR	208	162	22	3.2	168	82	51	6.1	13
APR	120	105	11	1.0	441	67	85	25.1	6
MAY	185	95	49	6.1	230	51	78	12.0	10
JUNE	246	166	32	4.9	292	110	63	11.2	8
JULY	175	150	14	1.4	207	76	63	7.7	11
AUG	210	140	33	5.2	257	86	67	12.7	13
SEPT	190	160	16	2.1	153	60	61	6.5	8
OCT	216	143	33	4.6	265	73	72	12.1	8
NOV	216	170	21	2.7	234	88	62	8.7	9
DEC	280	180	35	6.0	266	88	66	10.7	12
TOTAL	-	-	-	48.9	-	-	-	146.5	112
AVERAGE	214	150	30	4.1	277	86	69	12.4	9



DIGESTION



SLUDGE DIGESTION and DISPOSAL

MONTH	RAW SLUDGE			DIGESTED SLUDGE			SUPERNATANT		SLUDGE DISPOSAL	
	VOLUME	TOTAL SOLIDS	VOL SOLIDS	VOLUME	TOTAL SOLIDS	VOL SOLIDS	VOLUME	TOTAL SOLIDS	DEWATERED	LIQUID
	10 ³ gal	%	%	10 ³ gal	%	%	10 gal	%	cu yd	cu yd
JAN	27.9	3.6	71	3.9	6.2	57	-	-	0	24
FEB	25.2	3.0	77	2.6	5.5	58	-	.8	0	16
MAR	27.9	3.2	72	4.1	4.3	56	-	.7	0	24
APR	26.8	3.2	77	4.1	7.1	58	-	.6	0	24
MAY	27.5	3.6	72	5.4	7.7	54	-	.8	0	32
JUNE	26.9	4.4	79	6.7	8.9	53	-	.5	0	40
JULY	27.9	2.5	75	10.7	7.4	55	-	-	0	64
AUG	27.0	2.8	75	5.2	7.6	49	-	-	0	32
SEPT	25.7	3.9	78	5.3	9.6	56	-	-	0	32
OCT	26.4	3.2	82	5.2	4.9	60	-	-	0	32
NOV	26.4	4.0	76	5.4	5.0	69	-	-	0	32
DEC	34.1	-	-	5.4	-	-	-	-	0	32
TOTAL	329.7	-	-	64.0	-	-	-	-	0	384
AVERAGE	27.5	3.4	76	5.3	6.7	56	-	-	0	32

Date Due

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Water management in Ontario